Blast Effects Estimation Model (BEEM)

BACKGROUND

The Blast Effects Estimation Model (BEEM) is an assessment tool for estimating damage to structures and people due to terrorist weapons. It was developed for the CTTSO/TSWG as an enhanced replacement for the Navy's Force Protection Tool (FPT) and the Army's Anti-Terrorist Planner (AT-Planner). While both AT-Planner and FPT model airblast environments and report overall damage to an entire scene, the two models each have inherent strengths that complement one another. In the interest of serving the counter-terrorism community with a single, consistent, and agreed upon methodology and modeling tool, Naval Surface Warfare Center, Dahlgren Division (NSWCDD) was tasked to oversee the integration of the two models into a single coherent model for assessing airblast and fragmentation damage across a large scene. This single model, called BEEM, will simplify the operation of these two models and will reduce the confusion due to differing approaches to the same problem.

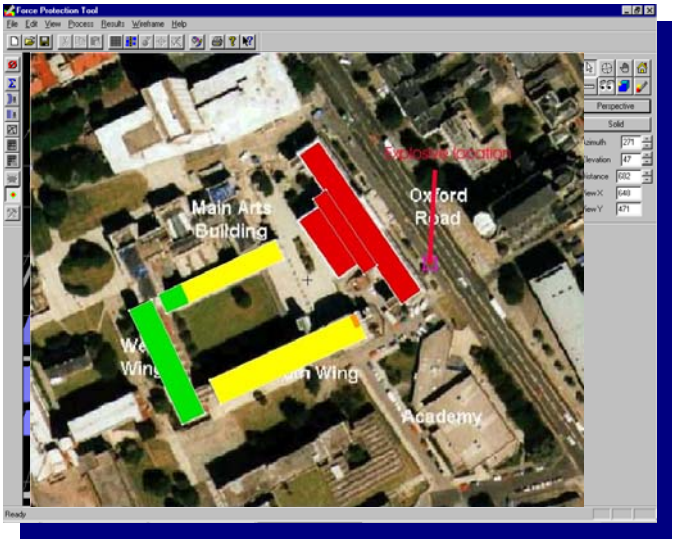
CAPABILITIES

Current capabilities of the BEEM include:

- System Integration
- Personnel Damage Analysis
- IED's Fragmentation Analysis
- Graphical User Interface (GUI)
- Airblast Analysis
- Glass Breakage Analysis
- Structural Analysis
- Building Database
- Standoff Analysis
- Help Files
- "What-if" scenarios (parametric studies)
- 3D graphical output
- Access Security
- Portability

OUTPUT

Currently, the output can be displayed in graphical as well as tabular form. The graphical output can display building and glass damage as well as standoff regions. The tabular output contains very detailed information for each element in the scene. This information includes data pertaining to airblast and fragmentation, personnel and equipment hazards, and building collapse. BEEM has a module for 3-D viewing of the damage scene. This module allows for rotation, zooming, and panning for better evaluation of the scene.



FUTURE OF BEEM

Future enhancements expected to be added to BEEM include a definition of fragmentation patterns capability, calculation of people damage inside buildings capability, different shapes of Improvised Explosive Devices (IEDs) processing, fragment loading processing on equipment, implementation of a Terrain Physics Model, batch run capability, internal detonation damage processing, and multiple detonations processing capability. The ability to import Industry Foundation Classes (IFC) files would make scene building quicker and more accurate for bases which have their data in this format. The ability to import and export data to common GIS formats would make scene building quicker and more accurate for bases which have their data in this format. In addition, it would allow interoperability with GIS based analysis tool. The ability to model ships in BEEM would allow it to be used for waterside FP analysis.

POINT OF CONTACT

U.S. Army Corps of Engineers
Protective Design Center

Internet Website:
Web Page: https://pdc.nwo.usace.army.mil/software/beem
Help Page: https://pdc.nwo.usace.army.mil/software/beem/help
Email: mailto:dll-cenwo-pagemaster-BEEM@nwo02.usace.army.mil

SIPRNet Website:
Web Page: https://usace-pdc.army.smil.mil/software/beem
Help Page: https://usace-pdc.army.smil.mil/software/beem/help
Email: mailto:pdcmail@usace-pdc.army.smil.mil

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